

IN THE DRAWINGS:

Please amend Figures 1, 13, and 14 as shown in the attached drawing sheets.

REMARKS

The Office Action dated June 17, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

By this Response, claims 1, 7, 15-17, 22-23, and 26 have been amended to more particularly point out and distinctly claim the subject matter of the present invention, and claims 2, 6, 8, 12-14, 20-21, and 24-25 have been cancelled without prejudice or disclaimer. Support for the amendments to claims 1, 7, 15-17, 22-23, and 26 may be found in the original disclosure, for example, at paragraphs [0093] and [0095] of the specification. Claim 18 was previously cancelled. No new matter has been added. Accordingly, claims 1, 3-5, 7, 9-11, 15-17, 19, 22-23, and 26 are currently pending in the application, and respectively submitted for consideration.

As a preliminary matter, Applicants thank the Examiner for the courtesy extended during the telephone interview conducted on July 15, 2008. The interview concerned the objection to the specification, specifically regarding the previously amended paragraph [0026] of the specification and proposed amendments to paragraphs [0014] and [0026] of the specification.

In view of the above amendments and the following remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections to the claims for the reasons discussed below.

Specification Objection

The Office Action objected to the specification, alleging that the referenced paragraph number [0026] for the paragraph that was amended in the Response of March 3, 2008 (“Previous Response”) is incorrect. As discussed in the interview, it appears that the most recent amendment to paragraph [0026] of the specification in the Previous Response should have been labeled paragraph [0014], rather than paragraph [0026]. Consistent with the proposed amendments discussed in the interview, Applicants respectfully submit that paragraph [0026] has been amended to restore the original text of the disclosure, and that paragraph [0014] has been amended accordingly. Support for the amendment of paragraph [0014] can be found in the original disclosure, for example, at original claim 19. Accordingly, Applicants respectfully request that the objection to the specification be withdrawn.

Drawing Objection

The Office Action objected to the drawings because Figure 1 should be designated by a legend such as -- Prior Art --. In response to the drawing objection to Figure 1, Applicants respectfully submit amended Figure 1, including a legend, -- PRIOR ART --.

The Office Action objected to the drawings under 37 CFR 1.83(a), alleging that the drawings fails to show every feature of the invention specified in the claims. Specifically, the Office Action alleged that the limitations “parameter value determiner,”

“adjuster,” “index value determiner,” “detector,” “determiner,” and “replacer,” in claims 7-12 and 25-26 are not shown in the drawings. (see Office Action at page 8).

With respect to the limitation “replacer,” Applicants present herewith amended drawings for Figures 13 and 14, which show the limitation “replacer.”

With respect to the remaining limitations, the objection is respectfully traversed for at least the following reasons. The limitations “parameter value determiner,” “adjuster,” “index value determiner,” “detector,” and “determiner,” are shown in the current drawings. Specifically, the limitation “parameter value determiner” is shown, for example, as parameter value determination block 11 in Figure 14; the limitation “adjuster,” is shown, for example, as adjusting block 12 in Figure 14; the limitation “index value determiner,” is shown, for example, as index value determination block 13 in Figure 14; the limitation “detector,” is shown, for example, as parameter value determination block 11 in Figure 14; and the limitation “determiner,” is shown for example, as index value determination block 13 in Figure 14.

Accordingly, Applicants respectfully request the objections to the drawings be withdrawn and submit that Figures 1, 13, and 14 are in compliance with 37 C.F.R. §1.83(a) and §1.83(c).

Claim Rejections under 35 U.S.C. §101

The Office Action rejected claims 17 and 19-22 under 35 U.S.C. § 101 because the claimed invention is allegedly directed to non-statutory subject matter. Specifically,

regarding claims 17 and 19-22, the Office Action alleged that claims 17 and 19-22 claim “a computer program,” that the computer programs are computer listings per se, which are merely sets of instructions capable of being executed by a computer, and that the claims, as a whole, are directed to non-statutory subject matter. (see Office Action at page 9). This rejection is respectfully traversed for at least the following reasons.

Applicants respectfully submit that claims 17 and 19-22 are directed to statutory subject matter because said claims recite functional descriptive material embodied on a computer readable medium, as defined by the MPEP. Specifically, MPEP § 2106.01 defines “functional descriptive material,” as “data structures and computer programs which impart functionality when employed as a computer component.” MPEP § 2106.01 further states that “when functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.” (see MPEP § 2106.01 – Computer-Related Nonstatutory Subject Matter).

Claims 17 and 19-22 clearly recite a computer program embodied on a computer-readable medium comprising a program code configured to control a processor to execute a process of enhancing a coded audio signal. As enhancing a coded audio signal is clearly a type of functionality, the computer program, when embodied on a computer-readable medium, permits the function of enhancing a coded audio signal to be realized.

Thus, claims 17 and 19-22 clearly recite functional descriptive material embodied on a computer readable medium, and thus recites patentable subject matter.

Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claim Rejections under 35 U.S.C. §112, First Paragraph

The Office Action rejected claims 17 and 19-22 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, regarding claims 17 and 19-22, the Office Action alleged that the claims include a limitation of “a computer program embodied on a computer-readable medium comprising a program code configured to control a processor to execute a process of,” and that said limitation introduces new subject matter, which is not specifically described in the original specification. This rejection is respectfully traversed for at least the following reasons.

Applicants respectfully submit that the original disclosure stated that “[t]he invention may also be embodied as a computer program product comprising portions for performing steps when the product is run on a computer.” (see Specification at paragraph [0014]). One of ordinary skill in the art would readily understand that a computer may have a processor and that the processor may perform the instructions of computer program products which are run on the computer. Furthermore, Applicants respectfully submit that the original disclosure stated that “[f]or example, the present invention may be implemented in a DSP (Digital Signal Processor) of the MGW.” (see Specification at

paragraph [0145]). Thus, one of ordinary skill in the art would readily understand the digital signal processor may execute the process of the computer program of claims 17 and 19-22. Thus, claims 17 and 19-22 do not include new subject matter. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claim Rejections under 35 U.S.C. §103(a)

The Office Action rejected claims 1, 3, 5, 7, 9, 11, 17, and 23 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Cezanne et al. (U.S. Publication No. 2004/0243404) (“Cezanne”), in view of Eriksson et al. (U.S. Publication No. 2002/0184010) (“Eriksson”). The Office Action took the position that Cezanne discloses all the elements of the claims with the exception of “determining a current second parameter value from the index further corresponding to a second parameter,” and “using the second parameter for determining the new index value.” Accordingly, the Office Action relied upon Eriksson as allegedly curing the deficiencies of Cezanne. Applicants respectfully submit that said claims recite allowable subject matter for at least the following reasons.

Claim 1, upon which claims 3-5 are dependent, recites a method, which includes determining a current first parameter value from an index corresponding to a first parameter, where a coded audio signal includes indices that represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal and a second parameter. The method further includes adjusting the current

first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The method further includes determining a current second parameter value from the index further corresponding to the second parameter. The method further includes determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value.

Claim 7, upon which claims 9-11 are dependent, recites an apparatus, which includes a parameter value determiner configured to determine a current first parameter value from an index corresponding to a first parameter and determine a current second parameter value from the index further corresponding to a second parameter, where a coded audio signal includes indices that represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal and the second parameter. The apparatus further includes an adjuster configured to adjust the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The apparatus further includes an index value determiner configured to determine a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first

parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value.

Claim 17, upon which claim 19 is dependent, recites a computer program embodied on a computer-readable medium including a program code configured to control a processor to execute a process of enhancing a coded audio signal including indices which represent audio signal parameters which include at least a first parameter representing a first characteristic of the audio signal and a second parameter. The process includes determining a current first parameter value from an index corresponding to a first parameter. The process further includes adjusting the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The process further includes determining a current second parameter value from the index further corresponding to a second parameter. The process further includes determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values, by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value.

Claim 23 recites an apparatus, which includes parameter value determination means for determining a current first parameter value from an index corresponding to a first parameter and determining a current second parameter value from the index further corresponding to a second parameter, where a coded audio signal includes indices that

represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal and the second parameter. The apparatus further includes adjusting means for adjusting the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The apparatus further includes index value determination means for determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value.

As will be discussed below, the combination of Cezanne and Eriksson fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Cezanne generally describes voice quality enhancement that is performed directly on a bit stream of encoded speech. As described in paragraph [0039], of Cezanne, a fixed codebook excitation gain is extracted from a far-end bit stream and the fixed codebook excitation gain is increased (e.g., amplified) by the amount of a noise compensation gain to provide a modified fixed codebook excitation gain to compensate for the near-end noise. Finally, the original fixed codebook excitation gain is replaced with the modified fixed codebook excitation gain. According to paragraph [0040], of Cezanne, it is

sufficient to extract only the fixed codebook gain table indices and operate on the fixed codebook gain indices. (see Cezanne at Abstract and paragraphs [0039]-[0040]).

Eriksson describes a network noise suppressor which includes means for partially decoding a CELP coded bitstream. The means determine a noise suppressing filter $H(z)$ from the decoded parameters. The means use this filter to determine modified LP and gain parameters. The means overwrite corresponding parameters in the coded bit-stream with the modified parameters. (see Eriksson at Abstract).

Applicants respectfully submit that Cezanne and Eriksson, whether considered individually or in combination, fail to disclose, teach, or suggest, all of the elements of the present claims. For example, the combination of Cezanne and Eriksson fails to disclose, teach, or suggest, at least, *“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,”* as recited in independent claim 1, and similarly recited in independent claims 7, 17, and 23.

In the “Response to Arguments” section, the Office Action stated:

In response to applicant’s argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e. “Eriksson does not deal with determining a new index value by minimizing an error between ...”, see Remarks: page 31, last paragraph to page 32, paragraph 3) are not recited in the rejected claim(s). (see Office Action at page 5).

Applicants respectfully submit that the independent claims have been amended to clarify the differences between the present invention and the cited prior art. Specifically, independent claim 1 recites determining a new index value ... by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value. Independent claims 7, 15-17, 22-23, and 26 have also been amended to recite similar limitations.

Regarding the cited prior art, Cezanne discloses that a noise estimator is applied to compute a noise level estimate from a near-end signal, and that a noise compensation gain is computed based on the noise level estimate. Cezanne further discloses that a fixed codebook excitation gain is extracted from the far-end bit stream, and the fixed codebook excitation gain is increased by the amount of the noise compensation gain to provide the modified fixed codebook excitation gain to compensate for the near-end noise. (see Cezanne at paragraphs [0039]-[0040]).

Eriksson discloses that the fixed and adaptive codebook gains are coded independently. Eriksson further discloses that in some coding modes with lower-bit rate they are vector quantized, and the adaptive codebook gain is also modified by the noise suppression. (see Eriksson at paragraph [0057]).

Neither Cezanne, nor Eriksson, address minimizing an error between an enhanced first parameter value and a new first parameter value such that no audible error is introduced to a second parameter value. Thus, Cezanne and Eriksson, whether

considered individually or in combination, fail to disclose, or suggest determining a new index value ... by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value.

Therefore, for at least the reasons discussed above, the combination of Cezanne and Eriksson fails to disclose, teach, or suggest, all of the elements of independent claims 1, 7, 17, and 23. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

Claims 3 and 5 depend upon independent claim 1. Claims 9 and 11 depend upon independent claim 7. Thus, Applicants respectfully submit that claims 3, 5, 9, and 11 should be allowed for at least their dependence upon independent claims 1 and 7, respectively, and for the specific elements recited therein.

The Office Action rejected claims 2, 4, 6, 8, 10, 12-16, 20-22, and 24-26 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Cezanne, in view of Eriksson, further in view of alleged admitted prior art (i.e. paragraphs [0058]-[0064] of the specification) (“AAPA”). The Office Action took the position that the combination of Cezanne and Eriksson discloses all the elements of the claims with the exception of “the background noise parameter value being an index value.” The Office Action then cited AAPA as allegedly curing the deficiencies of Cezanne and Eriksson. The rejection is respectfully traversed for at least the following reasons. Claims 2, 6, 8, 12-14, 20-21, and 24-25 were cancelled, and said cancellation effectively moots the rejection, with respect

to those claims. With respect to the remaining claims, Applicants respectfully submit that the remaining claims recite allowable subject matter for at least the following reasons.

Claim 15 recites a method, which includes determining a current first parameter value from an index corresponding to a first parameter, where a coded audio signal includes indices that represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal, a second parameter and a background noise parameter. The method further includes adjusting the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The method further includes determining a current second parameter value from the index further corresponding to the second parameter. The method further includes determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value. The method further includes detecting a current background noise parameter index value. The method further includes determining a new background noise parameter index value corresponding to the enhanced first characteristic.

Claim 16 recites an apparatus, which includes parameter value determination means for determining a current first parameter value from an index corresponding to a

first parameter and for determining a current second parameter value from the index further corresponding to a second parameter, where a coded audio signal includes indices that represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal, the second parameter and a background noise parameter. The apparatus further includes adjusting means for adjusting the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The apparatus further includes index value determination means for determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value. The apparatus further includes detecting means for detecting a current background noise parameter index value. The apparatus further includes determining means for determining a new background noise parameter index value corresponding to the enhanced first characteristic.

Claim 22 recites a computer program embodied on a computer-readable medium including a program code configured to control a processor to execute a process of enhancing a coded audio signal including indices which represent audio signal parameters which include at least a first parameter representing a first characteristic of the audio signal, a second parameter and a background noise parameter. The process includes determining a current first parameter value from an index corresponding to a

first parameter. The process further includes adjusting the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The process further includes determining a current second parameter value from the index further corresponding to a second parameter. The process further includes determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value. The process further includes detecting a current background noise parameter index value. The process further includes determining a new background noise parameter index value corresponding to the enhanced first characteristic.

Claim 26 recites an apparatus, which includes a parameter value determiner configured to determine a current first parameter value from an index corresponding to a first parameter and determine a current second parameter value from the index further corresponding to a second parameter, where a coded audio signal includes indices that represent audio signal parameters including at least the first parameter representing a first characteristic of the audio signal, the second parameter and a background noise parameter. The apparatus further includes an adjuster configured to adjust the current first parameter value in order to achieve an enhanced first characteristic, thereby obtaining an enhanced first parameter value. The apparatus further includes an index

value determiner configured to determine a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value. The apparatus further includes a detector configured to detect a current background noise parameter index value. The apparatus further includes a determiner configured to determine a new background noise parameter index value corresponding to the enhanced first characteristic.

As will be discussed below, the combination of Cezanne, Eriksson, and AAPA fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Applicants respectfully submit that Cezanne, Eriksson, and AAPA, whether considered individually or in combination, fails to disclose, teach, or suggest, all of the elements of the present claims. For example, the combination of Cezanne, Eriksson, and AAPA fails to disclose, teach, or suggest, at least, *“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new*

index value,” as recited in independent claim 15, and similarly recited in independent claims 16, 22, and 26.

While each of the present claims have their own scope, Applicants respectfully submit that Cezanne and Eriksson, whether considered individually or in combination, fails to disclose, or suggest, *“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,”* as recited in independent claim 15, and similarly recited in independent claims 16, 22, and 26, for similar reasons as to why Cezanne and Eriksson, each fail to disclose *“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,”* as recited in independent claim 1.

Furthermore, AAPA does not cure the deficiencies of Cezanne and Eriksson as AAPA fails to disclose, or suggest, *“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new*

first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,” as recited in independent claim 15, and similarly recited in independent claims 16, 22, and 26.

Therefore, for at least the reasons discussed above, the combination of Cezanne, Eriksson, and AAPA fails to disclose, teach, or suggest, all of the elements of independent claims 15, 16, 22, and 26. For the reasons stated above, Applicants respectfully request that this rejection be withdrawn.

Claim 4 depends upon independent claim 1. Claim 10 depends upon independent claim 7. As discussed above, the combination of Cezanne and Eriksson does not disclose, teach, or suggest all of the elements of independent claims 1 and 7. Furthermore, AAPA does not cure the deficiencies in Cezanne and Eriksson, as AAPA also does not disclose, teach, or suggest, at least, “*determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,”* as recited in independent claim 1, and similarly recited in independent claim 7. Thus, the combination of Cezanne, Eriksson, and AAPA does not disclose, teach, or suggest all of the elements of claims 4 and 10. Additionally, claims 4 and 10

should be allowed for at least their dependence upon independent claims 1 and 7, respectively, and for the specific elements recited therein.

The Office Action rejected claim 19 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Cezanne and Eriksson, in view of Etter et al. (U.S. Publication No. 2005/0071154) (“Etter”). (The Office Action actually reads “over CEZANNE and CEZANNE,” but it is assumed that CEZANNE AND ERIKSSON was intended.) The Office Action took the position that Cezanne and Eriksson discloses all the elements of the claims with the exception of “computer program is directed loadable into an internal memory of the computer.” The Office Action then cited Etter as allegedly curing the deficiencies of Cezanne and Eriksson. Applicants respectfully submit that said claims recite allowable subject matter for at least the following reasons.

The description of Cezanne and Eriksson, as described above, is incorporated herein. Etter generally discloses that an encoded speech signal is partially decoded to obtain an excitation parameter. The excitation parameter is used as input to estimate the noise level of the speech signal. The excitation parameter is the fixed codebook gain of the speech signal. The fixed codebook gain is multiplied by a scaling factor and then used as input for noise estimation. (see Etter at Abstract).

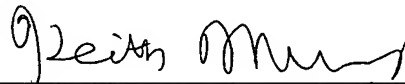
Claim 19 depend upon independent claim 17. As discussed above, the combination of Cezanne and Eriksson does not disclose, teach, or suggest all of the elements of independent claim 17. Furthermore, Etter does not cure the deficiencies in Cezanne and Eriksson, as Etter also does not disclose, teach, or suggest, at least,

“determining a new index value from a table relating index values to first parameter values and relating the index values to second parameter values, by minimizing an error between the enhanced first parameter value and a new first parameter value corresponding to the new index value such that no audible error is introduced to a new second parameter value corresponding to the new index value,” as recited in independent claim 17. Thus, the combination of Cezanne, Eriksson, and Etter does not disclose, teach, or suggest all of the elements of claim 19. Additionally, claim 19 should be allowed for at least its dependence upon independent claim 17, and for the specific elements recited therein.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Replacement Sheet, Figure 1
Replacement Sheet, Figure 13
Replacement Sheet, Figure 14